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Claims

[c1] 1. A method of forming a high thermally conductive and high strength article, comprising the steps of:
providing a polymer base matrix of, by volume, between approximately 30 and 70 percent;
providing a first filler of high modulus PITCH-based carbon material, by volume, between approximately 15 and 47 percent; the first filler having an aspect ratio of at least 10:1;
providing a second filler of PAN-based carbon material, by volume, between approximately 10 and 35 percent, the second filler having an aspect ratio of at least 10:1;
mixing the polymer base matrix, the first filler and the second filler together into a molding composition; and
net-shape injection molding the molding composition into an article having a thermal conductivity of at least 4 W/m°K and a tensile strength of at least 15 ksi.

[c2] 2. The method of Claim 1, further comprising the step of:
providing a third filler of thermally conductive material, by volume, between 1 and 10 percent, said third filler having an aspect ratio of less than 5:1; and

mixing the third filler with the polymer base matrix, the first filler and the second filler into the molding composition.

[c3] 3. The method of Claim 1, wherein said polymer base matrix is a polycarbonate material.

[c4] 4. The method of Claim 1, wherein said polymer base matrix is a liquid crystal polymer material.

[c5] 5. The method of Claim 1, wherein said first filler is of a fiber configuration.

[c6] 6. The method of Claim 1, wherein said second filler is of a fiber configuration.

[c7] 7. The method of Claim 1, wherein said first filler is of a flake configuration.

[c8] 8. The method of Claim 1, wherein said second filler is of a flake configuration.

[c9] 9. The method of Claim 1, wherein said second third filler is spheroid in shape.

[c10] 10. The method of Claim 1, wherein said third filler is of a grain configuration.

[c11] 11. The method of Claim 1, wherein said third filler is selected from the group consisting of boron nitride, alu-

minum, alumina, copper, magnesium and brass.